

Claims:

1. Apparatus for maintaining an optical cavity of a cavity enhanced optical spectroscopy instrument at a substantially constant temperature, the apparatus comprising:
  - a) an enclosure having interior and exterior wall surfaces, said enclosure surrounding said optical cavity, wherein said interior wall surfaces are spaced apart from said optical cavity;
  - b) at least one heat exchanger positioned within said enclosure in proximity to at least one of said interior wall surfaces;
  - c) at least one heat pump in thermal communication with both said heat exchanger and an ambient environment exterior to said enclosure;
  - d) at least one fan positioned within said enclosure, said fan causing a portion of a gas contained within said enclosure to circulate in laminar flow following a path substantially along interior wall surfaces of said enclosure, whereby said flowing gas makes thermal contact with said heat exchanger, said optical cavity not being situated within said flow path;
  - e) an optical bench supporting said optical cavity; and
  - f) at least one temperature sensor affixed to said optical cavity or said optical bench.
2. The apparatus of Claim 1, wherein there is present in said enclosure a plurality of heat pumps, heat exchangers and fans.
3. The apparatus of Claim 1, wherein at least a majority of the components of the optical train of said cavity enhanced optical spectroscopy instrument are situated within said enclosure and not within said flow path.
4. The apparatus of Claim 1, wherein there is at least a second temperature sensor affixed to said at least one heat exchanger.

5. The apparatus of Claim 1, wherein said temperature sensor comprises a thermistor.
6. The apparatus of Claim 1, wherein a layer of insulting material covers at least a substantial portion of at least one of the interior and exterior wall surfaces of said enclosure.
7. The apparatus of Claim 1, wherein said heat exchanger comprises a metal structure having a plurality of fins positioned in said laminar flow path.
8. The apparatus of Claim 1, wherein said heat pump comprises a Peltier Effect thermoelectric/cooler.
9. The apparatus of Claim 1, wherein said fan is driven by a DC electric motor.
10. The apparatus of Claim 1, wherein said optical bench is affixed to a plurality of mounts, which mounts maintain said bench out of contact with said interior wall surfaces.
11. The apparatus of Claim 10, wherein at least a portion of said mounts are positioned within said flow path
12. The apparatus of claim 1, wherein said gas is dry air.